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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,220	09/26/2003	Hyun-Soo Kim	3364P139	2869

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EXAMINER

STULTZ, JESSICA T

ART UNIT PAPER NUMBER

2873

DATE MAILED: 04/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,220

Applicant(s)

KIM ET AL.

Examiner

Jessica T. Stultz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figures 2A, 2B, 3, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Nobuhara.

Regarding claim 1, Shimizu et al discloses an optical signal processor (Column 5, line 46-Column 6, line 42, wherein the optical signal processor is the compression waveguide shown in Figures 1, 3, and 7), comprising: a saturable absorber area including a saturable absorber area (Column 5, line 46-Column 6, line 42, wherein the saturable absorber area is "2", Figures 1, 3, and 7) including a substrate, an active layer, a clad layer, and a first upper electrode (Column 5,

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line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the substrate is "9", the active layer is "3", the clad layer is "5", and the first upper electrode is "8", Figures 1, 3, and 7), which are sequentially formed on one face of the substrate (Figures 1, 3, and 7), and a first lower electrode formed on the other face to the substrate (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the first lower electrode is "7", Figures 1, 3, and 7); and a gain-clamped optical amplifier area (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the gain-clamped optical amplifier area is gain region "1", Figures 1, 3, and 7) including a substrate, an active layer, a clad layer, and a second upper electrode (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the substrate is "9", the active layer is "3", the clad layer is "5", and the second upper electrode is "8", Figures 1, 3, and 7) which are sequentially formed on one face of the substrate (Figures 1, 3, and 7), and a second lower electrode formed on the other face of the substrate (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the second lower electrode is "7", Figures 1, 3, and 7), the second upper electrode being isolated from the first upper electrode of the saturable absorber area (Shown in Figures 1, 3, and 7, wherein there is a space between the upper electrodes of the gain region "1" and the saturable absorber region "2"), wherein the device has a diffraction grating (Column 12, lines 33-59, wherein the grating is Bragg reflector "13", Figure 7), but does not specifically disclose that the substrate of the gain-clamped optical amplifier region has a diffraction grating for generating a laser beam. Nobuhara teaches of an optical amplifier including a substrate having a diffraction grating for generating a laser beam (Column 7, line 41-Column 8, line 24, wherein the optical amplifier includes substrate "18" and diffraction grating "20", Figure 7), an active layer, a clad layer, and an upper electrode (Column 7, line 41-Column

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8, line 24, wherein the active layer is "11", the clad layer is 13" and the upper electrode is "15", Figure 7), which are sequentially formed on one face of the substrate (Shown in Figure 7), and a lower electrode on the other face of the substrate (Column 7, line 41-Column 8, line 24, wherein the lower electrode is "14", Figure 7) , wherein the diffraction grating is included in the substrate for the purpose of providing a laser beam to be amplified of the required wavelength by changing the corrugation pitch of the grating (Column 4, lines 52-59). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the signal processor of Shimizu et al to further include the substrate of the optical amplifier to have a diffraction grating for generating a laser beam since Nobuhara teaches of an optical amplifier including a substrate having a diffraction grating for generating a laser beam, an active layer, a clad layer, and an upper electrode, which are sequentially formed on one face of the substrate, and a lower electrode on the other face of the substrate, wherein the diffraction grating is included in the substrate for the purpose of providing a laser beam to be amplified of the required wavelength by changing the corrugation pitch of the grating.

Regarding claim 2, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and it is further inherent from Shimizu et al that an ohmic contact layer is formed between the clad layer and the upper electrodes in both the saturable absorber and the gain-clamped area, this being reasonably based upon the electrodes being disclosed as ohmic electrodes (Column 10, line 57-Column 11, line 27, wherein the electrodes "8" are ohmic and therefore have an ohmic contact layer, Figures 1, 3, and 7).

Regarding claim 3, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Shimizu et al further discloses that the saturable absorber and the

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gain-clamped amplifier area are formed on one substrate, and the first and second upper electrodes are isolated from each other according to an etched groove (Shown in Figures 1, 3, and 7, wherein the saturable absorber areas “2” and the amplifier areas “1” have electrodes “8” separated by etched grooves).

Regarding claims 5-6, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Nobuhara further discloses that the period of the diffraction grating is varied to control the wavelength of the laser beam generated by the diffraction grating (Column 4, lines 52-59, wherein the corrugation pitch of the grating is changed to provide a laser beam of the desired wavelength) and that the wavelength of the laser beam is included in the gain bandwidth of the active layer but is not included in an amplification bandwidth of the gain-clamped optical amplifier area (Column 4, line 52-Column 5, line 4).

Regarding claim 7, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Nobuhara further teaches that the substrate is n-type InP (Column 7, lines 41-45, wherein the substrate is “18”, Figure 7), the active layer is InGaAsP (Column 7, lines 56-65, wherein the active layer is “11”, Figure 7), and the clad layer is InP (Column 7, lines 66-68, wherein the clad layer is “13”, Figure 7).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Nobuhara and further in view of Suzuki et al.

Regarding claim 4, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above, but do not specifically disclose that the facets of the device are shielded with an anti-reflection thin film. Suzuki et al teaches of a device including an optical amplifier area wherein the facets of the device are shielded with an anti-reflection thin film

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(Column 31, line 65-Column 32, line 22, wherein the laser amplifier has anti-reflection film "313" on the facets) for the purpose of suppressing the reflectivity of the facets and to protect against multiple reflections of light (Column 31, line 65-Column 32, line 22 and Column 39, lines 13-23). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the optical signal processor of Shimizu et al and Nobuhara to have facets of the device shielded with an anti-reflection thin film since Suzuki et al teaches of a device including an optical amplifier area wherein the facets of the device are shielded with an anti-reflection thin film for the purpose of suppressing the reflectivity of the facets and to protect against multiple reflections of light.

Response to Arguments

Applicant's arguments filed February 18, 2005 have been fully considered but they are not persuasive. In response to the argument that the laser of Shimizu is not inputted into the saturable absorber to reduce the recovery time of the saturable absorber, the examiner argues that it is not claimed that the laser needs to be inputted into the saturable absorber to reduce the recovery time of the saturable absorber. In response to the argument that the lasers of Shimizu and Nobuhara are not applicable to high bit-rate optical signals, the examiner argues that it is not claimed that the laser needs to be applicable to high bit-rate optical signals.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

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USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the applicant argues that there is no motivation to combine Nobuhara with Shimizu since Shimizu does not need to generate a laser beam and since the amplifier of Nobuhara and the compressor of Shimizu are used for different purposes. However, the examiner disagrees because the optical amplifier region of Shimizu would still work with the addition of the diffraction grating, even though the systems have different purposes, wherein the grating would add the function of providing a laser beam to be amplified of a required wavelength by changing the corrugation pitch of the grating (Column 4, lines 52-59 of Nobuhara).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

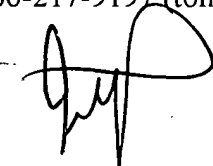
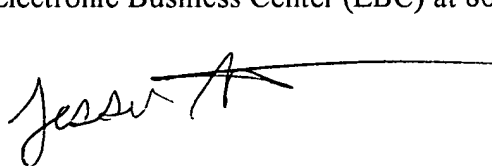
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jessica Stultz
Patent Examiner
AU 2873
April 15, 2005

JORDAN SCHWARTZ
PRIMARY EXAMINER